Appl. No.: 09/928,221
Amdt. Dated: 05/19/2005
Off. Act. Dated: 04/19/2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended): A method of providing a medium access control protocol within a wireless network having a plurality of nodes communicating over a channel, comprising:

transmitting a data packet over said channel by a first node, after a first collision-avoidance delay interval, in response to receipt of a ready-to-receive control packet from a second node indicating that said second node is ready to receive a data packet; and

canceling transmission of said data packet during said first collision-avoidance delay interval in response to receipt of a no-transmission-request control packet which indicates the detection of activity within said channel[[.]];

wherein said ready-to-receive control packet further indicates that said second node is requesting transmission of data to said first node;

wherein transmission of said data packet from said second node to said first node is responsive to the receipt of a clear-to-send control packet from said first node indicating that said second node is clear to send the data packet; and

wherein said second collision-avoidance interval substantially equals or exceeds the time required for transmitting a ready-to-receive control packet plus seven times the maximum propagation delay between the nodes communicating over said channel.

2. (original): A method as recited in claim 1, wherein said first collision-avoidance delay interval is set to at least the maximum propagation delay between the nodes communicating over said channel.

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3. (canceled)

4. (currently amended): A method as recited in claim [[3]] 1, wherein said clear-to-send control packet is of sufficient length that transmission thereof requires a length of time which exceeds the time for transmitting a ready-to-receive control packet by twice the maximum propagation delay between the nodes communicating over said channel.

5. (canceled)

6. (currently amended): A method as recited in claim 1[[,]]:

wherein said first node is one of a plurality of nodes that have received said ready-to-receive control packet from said second node;

wherein transmission of said data packet from said second node is preceded by transmission of a clear-to-send control packet indicating that said second node is clear to send the data packet, followed by a second collision-avoidance interval; and

further comprising canceling transmission from said second node to said first node, during said second collision-avoidance interval, in response to receipt of a no-transmission-request control packet.

7. (original): A method as recited in claim 6, wherein said clear-to-send control packet is of sufficient length that transmission thereof requires a length of time which exceeds the time for transmitting a ready-to-receive control packet by twice the maximum propagation delay between the nodes communicating over said channel.

8. (canceled)

9. (original): A method as recited in claim 1, wherein said channel of said wireless network is subject to the operation of hidden terminals.

10. (original): A method as recited in claim 1, wherein each of said nodes communicating on said channel is adapted for detecting carrier within said channel.

11. (currently amended): A method of providing collision-avoidance within a medium access control protocol within a wireless network having a plurality of nodes communicating over a channel, comprising:

receiving within a first node, a ready-to-receive-or-transmit control packet from a neighboring second node;

transmitting a data packet from said first node to said second node, following a first collision-avoidance delay interval, if data is available in said first node;

canceling transmission of said data packet from said first node to said second node if a no-transmission-request control packet is received by said first node during said first collision-avoidance interval;

transmitting a clear-to-send control packet, followed by a second collision-avoidance interval, followed by a data packet from said second node to said first node, if said first node has no data available for transmission to said second node; and

canceling transmission of said data packet from said second node to said first node if a no-transmission-request control packet is received by said second node during said second collision-avoidance interval;

<u>wherein said second collision-avoidance interval substantially equals or exceeds the time required for transmitting a ready-to-receive control packet plus seven times the maximum propagation delay between the nodes communicating over said channel.</u>

12. (original): A method as recited in claim 11, wherein said first collision-avoidance delay interval is set to at least the maximum propagation delay between the

nodes communicating over said channel.

13. (original): A method as recited in claim 11, wherein said clear-to-send control packet is of sufficient length wherein transmission requires a length of time which exceeds the time for transmitting a ready-to-receive control packet by twice the maximum propagation delay between the nodes communicating over said channel.

14. (canceled)

15. (original): A method as recited in claim 11, wherein said channel of said wireless network is subject to the operation of hidden terminals.

16. (original): A method as recited in claim 11, wherein each of said nodes communicating on said channel is adapted for detecting carrier within said channel.

17. (original): A method of providing receiver-initiated collision-avoidance as a medium access control protocol within a wireless network having a plurality of transceiver nodes communicating over a channel, wherein correct collision-avoidance may be provided despite the existence of hidden terminals within said network, comprising:

transmitting an RTR (ready-to-receive) control packet, or equivalent, by a first node to a neighboring second node;

said RTR control packet indicative of a receiver-initiated transmission request wherein said first node is ready to receive a data packet over said channel;

receiving said RTR control packet from said first node by said second node wherein said second node pends for a sufficient first collision-avoidance interval;

transmitting an NTR (no-transmission-request) control packet, or equivalent, if channel activity is detected by said first node proximal to the sending of said RTR

control packet;

said NTR control packet indicative that said second node is to cancel transmission of said data packet to avoid a data packet collision;

receiving said NTR control packet, or equivalent, by said second node to cancel the transmission of said data packet; and

transmitting said data packet from said second node to said first node if no NTR control packet was received within said first collision-avoidance interval[[.]];

wherein said second collision-avoidance interval substantially equals or exceeds the time required for transmitting said RTR control packet plus seven times the maximum propagation delay between the nodes communicating over said channel.

18. (original): A method as recited in claim 17, wherein said transceiver nodes comprise single-channel radios having carrier sense capability.

19. (original): A method as recited in claim 17, wherein said first collision-avoidance delay interval is set to at least the maximum propagation delay between the nodes communicating over said channel.

20. (original): A method as recited in claim 17, wherein said RTR control packet further indicates that said first node is requesting a sender-initiated data transmission if said second node has no data packets for transmitting to said first node, and further comprising:

transmitting a CTS control packet (clear-to-send), or equivalent, by said second node, if said second node has no data packets for transmitting to said first node;

wherein said CTS control packet indicates that said first node is requesting to transmit data to said second node, if said second node has no data for transmitting to said first node; and

transmitting a data packet from said first node to said second node after

receiving said CTS control packet.

21. (original): A method as recited in claim 17, wherein transmission of said RTR control packet is from said first node to said second node along with at least one additional neighboring nodes of said first node, and further comprising:

transmitting an RTS control packet (ready-to-send) by said neighbors of said first node which have at least one data packet for transmitting to said first node; and

monitoring for an NTR control packet from said first node during a second collision-avoidance interval prior to transmitting of said data packet to said first node.

Claims 22-27 (canceled)

28. (new): A method of providing a medium access control protocol within a wireless network having a plurality of nodes communicating over a channel, comprising:

transmitting a data packet over said channel by a first node, after a first collision-avoidance delay interval, in response to receipt of a ready-to-receive control packet from a second node indicating that said second node is ready to receive a data packet;

canceling transmission of said data packet during said first collision-avoidance delay interval in response to receipt of a no-transmission-request control packet which indicates the detection of activity within said channel;

wherein said first node is one of a plurality of nodes that have received said ready-to-receive control packet from said second node;

wherein transmission of said data packet from said second node is preceded by transmission of a clear-to-send control packet indicating that said second node is clear to send the data packet, followed by a second collision-avoidance interval; and

canceling transmission from said second node to said first node, during said second collision-avoidance interval, in response to receipt of a no-transmission-request control packet;

wherein said second collision-avoidance interval substantially equals or exceeds the time required for transmitting a ready-to-receive control packet plus seven times the maximum propagation delay between the nodes communicating over said channel.